



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

COMPUTER SCIENCE

0478/22

Paper 2

May/June 2016

MARK SCHEME

Maximum Mark: 50

Published

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This document consists of **6** printed pages.

Page 2	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2016	0478	22

Section A

1 (a) (i) Many correct answers, they must be meaningful. This is an example only.

- NumSacks, integer, number of sacks
 - SacksAccepted, integer, number of sacks accepted
 - TotalWeight, real, total weight of all sacks
- [3]

(ii) Any three from

- TopWeight, 50.1
 - BottomWeight 49.9
 - TopWeightCement 25.1
 - BottomWeightCement 24.9
- [3]

(b) Any five from:

- initialise total weight of order
 - input number of sacks for each type *outside loop(s)*
 - loop for order completion
 - input weight *inside loop(s)*
 - add weight of accepted sack to total weight
 - output total weight *outside all loop(s)*
 - appropriate prompts for input number of sacks for each type and input weight
- [5]

Max 5 marks

Sample Answer 1

```

INPUT 'Number of sand sacks ordered ' num_sand_ordered
INPUT 'Number of cement sacks ordered ' num_cement_ordered
INPUT 'Number of gravel sacks ordered ' num_gravel_ordered
total_weight ← 0

FOR Counter ← 1 TO num_sand_ordered
    INPUT 'weight of sack of sand ' sack_weight
    total_weight ← total_weight + sack_weight
NEXT Counter
FOR Counter ← 1 TO num_cement_ordered
    INPUT 'weight of sack of cement ' sack_weight
    total_weight ← total_weight + sack_weight
NEXT Counter
FOR Counter ← 1 TO num_gravel_ordered
    INPUT 'weight of sack of gravel' sack_weight
    total_weight ← total_weight + sack_weight
NEXT Counter
Print 'Total weight of sacks is ' total_weight

```

Page 3	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2016	0478	22

Sample Answer 2

```

INPUT 'Number of sand sacks ordered ' num_sand_ordered
INPUT 'Number of cement sacks ordered ' num_cement_ordered
INPUT 'Number of gravel sacks ordered ' num_gravel_ordered
total_sacks_ordered ← num_sand_ordered + num_cement_ordered +
num_gravel_ordered
total_weight ← 0

FOR Counter ← 1 TO total_sacks_ordered
    INPUT 'weight of sack ' sack_weight
    total_weight ← total_weight + sack_weight
NEXT Counter
Print 'Total weight of sacks is ' total_weight

```

- (c) (i) 1 mark for value reason, all values and reasons must be different. There are many possible correct answers these are examples only.

Data value 49.95
Reason – normal data sand should be accepted

Data value 50.1
Reason – boundary data sand should be rejected

[2]

(ii)

Data value 25
Reason – normal data cement should be accepted

Data value 26.7
Reason – abnormal data cement that should be rejected

[2]

- (d) Maximum 5 marks in total, maximum 3 marks if only programming statements used

Description (may include reference to program statements)

- use of prices for calculation of regular price either numbers, variables or constants (sand and gravel 2, cement 3)
- description of calculation of regular price, multiply no of sand sacks by 2, multiply no of gravel sacks by 2, multiply no of cement sacks by 3
- output of regular price
- description of calculating the number of special packs using the pack information (2 sacks of sand, 2 sacks of gravel and 1 sack of cement)
-repeat until there are no more packs in the order (less than 2 sacks of sand or less than 2 sacks of gravel or no sacks of cement)
- calculation of discount price and/or amount saved
- output discount price and/or amount saved

[5]

Page 4	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2016	0478	22

Section B

2 (i) 1 mark for each improvement

use FOR ... NEXT instead of REPEAT ... UNTIL

Move PRINT to after the end of the loop

Add error checking to check that the value input is positive

[3]

(ii) 3 marks maximum, 1 mark for each improvement correctly included.

Sample answer below

```
1 Total = 0
2   FOR Counter = 1 To 10
3     REPEAT
4       INPUT Num
5     UNTIL Num > 0
6     Total = Total + Num
7   NEXT Counter
8 PRINT Total
```

[3]

3

Area	Tins	Height	Width	Doors	Windows
0	0	3	5	1	0
13.5		3	7	0	0
34.5		3	5	0	3
46.5		3	7	1	1
65		-1	0	0	0
	7				

(2 marks)

←(1 mark)→

←

(1 mark)

→

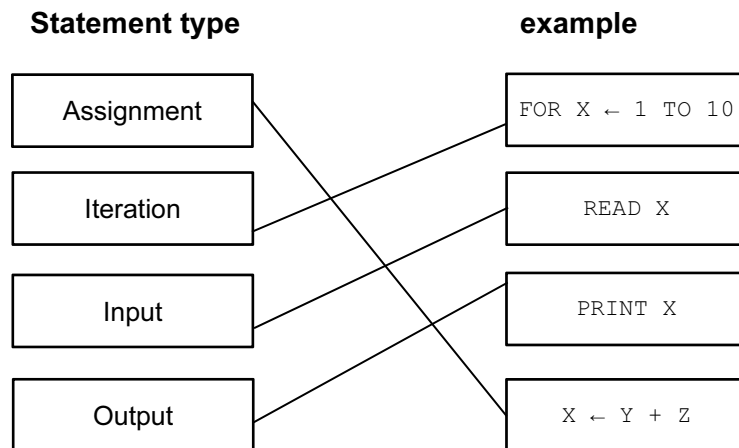
1 mark 0, 13.5

1 mark for rest

[4]

Page 5	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2016	0478	22

- 4 1 mark for each correct line, maximum 3 (zero correct 0, one correct 1, two correct 2, three or four correct 3), each box must have only one connection.



[3]

- 5 – data structure (one—dimensional) array [3]
 – reason to simplify programming/ make programs shorter, etc. [2]

- 6 – IF (... THEN ... ELSE ... ENDIF) [2]
 – CASE (... OF ... OTHERWISE ... ENDCASE) [2]

- 7 (a) – 7 [1]

- (b) – Brochure Number..... [2]
 – Uniquely identifies each record/each Brochure Number different/no duplicates [2]

- (c) – Number of Seats – number/integer [2]
 – Price in \$ – currency/real [2]

- (d) 1 mark for each correct result, 1 mark for the results in descending order of price

- Recliner sofa 1,200 RS23 [3]
 – Recliner chair 600 RC01 [3]

Page 6	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2016	0478	22

(e)

Field:	Brochure Number	Material	Colour	Price in \$	Number of Seats
Table:	SOFASELECT	SOFASELECT	SOFASELECT	SOFASELECT	SOFASELECT
Sort:					
Show:	☒	☒	☒	☒	☐
Criteria:					>2
or:					
	(1 mark)	(1 mark)	(1 mark)	(1 mark)	(1 mark)

[5]